SIG: NVI (Non-Visual Interaction)

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Abstract
In recent years there has been a surge in the development of non-visual interaction techniques targeting two application areas: making content accessible to visually impaired people, and supporting minimal attention user interfaces for situationally impaired users. This SIG aims to bring together the community of researchers working around non-visual interaction techniques for people of all abilities. It will unite members of this burgeoning community in a lively discussion and brainstorming session. Attendees will work to identify and report current and future research challenges as well as new research avenues.

Author Keywords
Non-visual interaction; eyes-free interaction; visual impairment; situational impairment; accessibility; haptic; audio; thermal; gestural interaction.

Introduction
In a recent fact sheet, the WHO reports that 285 million people are visually impaired worldwide [16]. Improving access to information and technology for visually impaired people is thus a significant challenge for HCI

researchers and practitioners. While non-visual interfaces have traditionally targeted blind users, eyes-free interaction is increasingly becoming common across a wide range of contexts, such as for situationally impaired mobile device users [6,7]. Motivations for eyes-free interaction include environmental, social, device related and personal factors [17]. We believe that it would be beneficial for all researchers in the field to work together more tightly, as challenges for non-visual interaction (NVI) seem to overlap regardless of users' abilities.

Non-visual interaction techniques typically leverage modalities such as haptics [10] and audio [13,18], and feature applications such as internet browsing [1], text entry [14], indoor and outdoor navigation [2,10], maps exploration [5,8], games [15], crowd-based Q&A [4], and even photography [9].

This SIG aims to discuss the challenges of NVI as a whole; that is, connecting the accessibility community with other NVI researchers. In fact, one of the current research challenges is in finding out whether the problems encountered by visually-impaired people are similar to those of sighted users whilst situationally impaired. Other challenges are related to the paradigm shift from visual interfaces: when to provide NV interfaces? How to seemingly shift between modalities? How to perform traditional computational tasks without visual feedback in an efficient and effective way? How to keep the cognitive load to a minimum? Examples of tasks comprise menu navigation, text-input, exploration of large datasets (e.g. social network feeds), understanding visual representations (e.g. graphics, maps), and so forth. Other challenges may arise when using specific modalities such as eyes-free gestural interaction on touch screens [11,12], which can be improved by haptic feedback [3].

Much work on non-visual HCI has come from the accessibility community. Several international conferences address accessibility issues (*e.g.,* the ACM SIGACCESS Conference on Computers and Accessibility, the International Conference on Computers Helping People with Special Needs, and the International Cross-Disciplinary Conference on Web Accessibility). However, these conferences focus broadly on accessibility issues, and do not specifically focus on non-visual interaction or HCI. The IEEE World Haptics and Eurohaptics Conferences specifically focus on haptic interaction. Other conferences, such as MobileHCI, address NVI in mobile contexts, but only feature a subset of the broader community.

We believe that CHI is the ideal venue for bringing together the community exploring NVI, for the following reasons. First, NVI for visually impaired and sighted users is of interest to the CHI community. CHI 2012 comprised a paper session entitled "Supporting visually impaired users," and has featured papers on NVI for both visually impaired and sighted users. Second, CHI is a regularly-occurring and global event. Third, CHI is a multidisciplinary conference that attracts practitioners with a variety of backgrounds, which may play an important role in this transversal field. Finally, since CHI is not focused exclusively on accessibility, it provides the opportunity to connect accessibility researchers with other NVI researchers. Given the prevalence of visual interaction and the relative obscurity of NVI, technical disruption may be required to improve NVI, and a CHI SIG provides a rich environment for creating such disruption.

Invited Participants

Our aim is to bring together and reinforce the community of researchers and practitioners working on non-visual interaction for people of all abilities. This includes interaction for visually impaired people, as well as NVI for sighted people. We hope to create new synergies and identify future challenges.

We plan to invite known members of the community personally by mail, including visually impaired researchers. Furthermore, we will create a Facebook event and website for advertising the SIG. The SIG event will be open to all. Those who wish to present during the session will be asked to send in a short description of their main research areas before the conference.

Schedule of this SIG CHI Meeting

The aim of this SIG is to discuss how to create and maintain the community of NVI, and to identify future research challenges and directions. The SIG will be most relevant to researchers, practitioners or people interested in the field of NVI. We think that by working together we can connect technologies and ideas to identify the opportunities and challenges towards more accessible and usable interactions.

The organization and schedule of this SIG will be as follows:

- 5 minutes: introduction to the SIG, presentation of the objectives and schedule.
- 10 minutes: moderators will give a brief presentation in order to give an overview of the field and introduce the discussion topics
- Brainstorming session (50 min): if less than 20 participants, attendees present themselves. Groups of participants based on a selection of shared interests will be created. Moderators will structure the ideas according to different discussion topics (sensory modalities, specific user groups, type of application, etc.). Groups will be encouraged (but not required) to discuss three primary questions, developed by the organizers:
    1. Do we want to create an official community and how can we keep this community alive? Do we want to create sub communities (e.g., for projects addressing visually impaired people, or haptic interaction) or do we want to unite the whole NVI community? (15 minutes)
    2. Which are the future challenges that we expect in our field and how can we face them? (20 minutes)
    3. Do we want to organize a workshop for CHI 2014? (15 minutes)
- 15 minutes: Working groups report back; summary of the event and next steps.

Post-CHI Activities

After CHI, we will sum up the discussion and share the results with the broader community via publication (e.g., on the SIGACCESS newsletter or ACM Interactions). We will also follow up on a discussion board, which will be used to plan activities for this community in 2014 and beyond. Our aim is to implement a regular meeting of community members at venues such as CHI and ASSETS. An additional objective is the organization of a workshop on NVI for CHI 2014.

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